LIFE TABLES
1950-52

Supplement to the
Ninety-ninth Annual Report
of the Registrar General
for Scotland

TABLE OF CONTENTS

GENERAL REGISTRY OFFICE OF BIRTHS, ETC.,
NEW REGISTER HOUSE,
EDINBURGH, 14TH DECEMBER, 1954

SIR,

It is customary after each census of the population to prepare new life tables based upon current mortality experience related to the age grouping and sex distribution of the population as established by the census. I have the honour to enclose new life tables which have been prepared by the Government Actuary from data supplied since the 1951 census, along with a report on the tables which he has been good enough also to supply. The documents are presented as a supplement to my annual report for the year 1953, and, like those provided after the last census, should be laid before Parliament.

I am, Sir,

Your obedient Servant,

E. A. HOGAN,

Registrar-General

THE SECRETARY,
DEPARTMENT OF HEALTH FOR SCOTLAND.

REPORT ON LIFE TABLES BY
THE GOVERNMENT ACTUARY

To E. A. HOGAN, Esq., C.B.E., Registrar-General for Scotland.

Sir,

In compliance with your request I have prepared Life Tables for Scotland based on the Census of 1951 and the deaths registered during the three years 1950, 1951 and 1952. I have also investigated the extent to which, during this period, the mortality of each sex varied according to marital condition and area of residence. On these matters I submit the following report.

2. The Census was taken on the night of 8th April, 1951, i.e., nearly three months before the mid-point of the three calendar years 1950, 1951 and 1952 to which the mortality data relate. It was therefore necessary to consider whether the population actually enumerated at each age should be adjusted in order to produce a figure which could be regarded as representing more exactly the mean population of the three-year period. A similar problem arose in the construction of the Life Tables based on the 1931 Census. As on that occasion, the conclusions reached were that the differences between rates of mortality derived from an estimated mean population and those based on the Census population would be very small and that the balance of advantage lay in the use of the Census figures unadjusted.

3. The main body of the 1931 Life Tables was constructed by deriving pivotal values of the death-rate at quinary age-points and interpolating the rates at the intervening ages by an osculatory process. A number of earlier national life tables have been constructed, both for England and Wales and for Scotland, by this method since it was developed, early in the present century, by the late Mr. George King. The method is simple to apply and has the advantage of adhering closely to the original data, and although on the present occasion some consideration was given to the possibility of employing other methods, it was decided to adhere to what has now become the traditional practice. Notes on the system of age-grouping employed, and on the processes used to derive the mortality rates at early and advanced ages, are given in Appendix I.

4. In Table A, the "expected" deaths obtained by applying the graduated rates of mortality to the Census population are compared with the deaths actually recorded. The table omits the very young ages for which the rates of mortality were computed from the records of births and deaths without reference to the Census enumeration.

4

TABLE A

Comparison of actual and expected deaths

Age Group	Males				Females			
	Actual deaths (annual average 1950–52)	Expected deaths	Actual less expected deaths +	Actual less expected deaths −	Actual deaths (annual average 1950–52)	Expected deaths	Actual less expected deaths +	Actual less expected deaths −
6– 9	129	129		—	84	83	1	
10–14	105	110		5	84	90		6
15–19	200	191	9		185	185		—
20–24	265	265		—	294	293	1	
25–29	339	337	2		354	351	3	
30–34	353	351	2		359	358	1	
35–39	493	490	3		476	476		—
40–44	774	775		1	651	653		2
45–49	1,283	1,288		5	916	911	5	
50–54	1,868	1,852	16		1,273	1,268	5	
55–59	2,410	2,423		13	1,766	1,762	4	
60–64	3,164	3,156	8		2,438	2,439		1
65–69	3,887	3,885	2		3,512	3,507	5	
70–74	4,657	4,671		14	4,646	4,649		3
75–79	4,798	4,781	17		5,103	5,076	27	
80–84	3,296	3,289	7		4,207	4,203	4	
85–89	1,444	1,447		3	2,439	2,435	4	
90–94	380	360	20		837	842		5
95 & over	47	67		20	156	148	8	
Total	29,892	29,867	455*	430*	29,780	29,729	423*	372*

*These figures represent the grand totals of the "plus" and "minus" figures respectively at each individual age. The totals of the "plus" and "minus" columns in the table would have little meaning, as the figure for each age-group is itself the net aggregate of five "plus" or "minus" figures.

The table in general calls for no comment; as already mentioned in paragraph 3, it is a characteristic of King's method that the results of the graduation adhere closely to the original data. In the last two age-groups, however (which are outside the scope of the method), the differences between the actual and expected deaths are, in the case of men, relatively large. The reasons for this are explained in Appendix I.

5. Complete life tables for males and females respectively are given in Appendix II, which also contains abridged tables for Edinburgh and Glasgow. Each of the main tables is based on a radix of 100,000 births and on rates of mortality (q_x) which at every age proceed to five places of decimals. This degree of refinement is in strict accordance with precedent and is convenient as a means of exhibiting the smooth progression of the graduated rates; it should, however, be recognised that it endows the computing processes with an appearance of precision which is not justifiable on statistical grounds. Any rate of mortality is subject to a margin of error which is dependent on the numbers living and dying from which it is calculated. To give practical recognition to this in tabulating the values of q_x it would be necessary to give alongside each value a measure of the margin of error, or—since it would be impossible to derive a single column of l_x which would take account of these margins—to vary the number of decimal places in q_x according to the numbers in the population, and the numbers of deaths, at each age. This, however, would give the table a complicated and untidy appearance and possibly

lead to some confusion in the course of comparisons with other tables designed on the traditional lines. For these reasons the customary method of presentation has again been adopted.

The Secular Decline in Mortality Rates

6. Over the greater part of the period for which statistics of population and deaths have been recorded mortality in Scotland has been steadily changing. Mortality tables based on successive censuses provide a means of assessing the extent of this change in different inter-censal periods. On page 1 of the report* on the 1931 Life Tables reference was made to the tables—official or unofficial—which were based on the Censuses of 1871, 1891 and 1901, 1911 and 1921. A convenient synopsis of these tables appears in a paper by Dr. J. C. Dunlop, the then Registrar-General for Scotland, which was published in 1925 in Volume X of the Transactions of the Faculty of Actuaries. The rates there given, with those derived from the Censuses of 1931 and 1951, have been used to provide, in Table B below, an index of movements in the rates of mortality at specimen ages during the period 1871–1951.

TABLE B

Rates of mortality for males (M) and females (F) expressed as percentages of 1871 rates

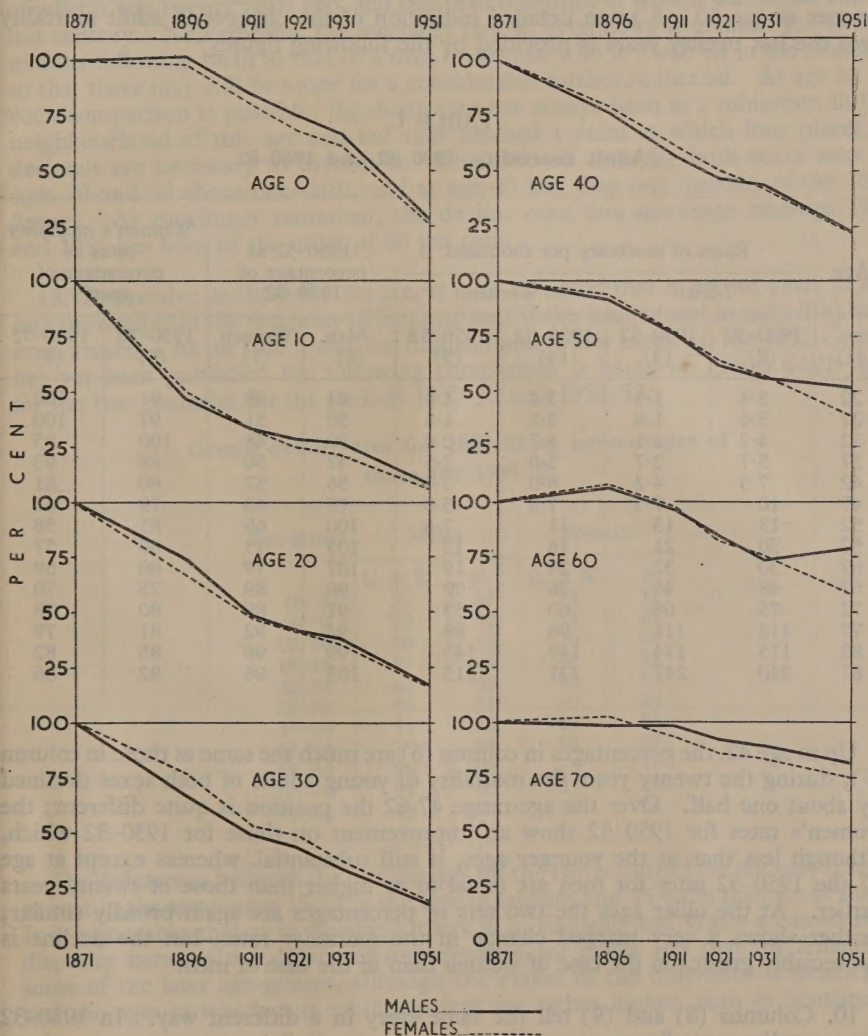| Age		1871	1896	1911	1921	1931	1951
		Number of years' deaths used in construction of table					
		1	10	3	3	3	3
0	M	100	102	85	75	67	29
	F	100	98	80	68	61	27
10	M	100	47	34	29	27	9
	F	100	50	33	25	21	6
20	M	100	74	49	42	38	17
	F	100	67	47	42	35	16
30	M	100	67	49	43	34	17
	F	100	77	53	49	37	18
40	M	100	76	57	47	44	23
	F	100	79	61	50	42	22
50	M	100	92	78	62	56	52
	F	100	94	77	64	57	38
60	M	100	106	97	85	74	79
	F	100	108	98	83	75	58
70	M	100	99	99	93	90	82
	F	100	103	94	86	84	75
80	M	100	96	99	104	108	105
	F	100	106	101	106	106	100
90	M	100	117	103	105	108	112
	F	100	114	102	102	108	107

7. In considering the run of the figures in Table B it should be borne in mind that, with one exception, the tables of mortality rates from which the index numbers are derived were based on the experience of three years or—in the case of the 1871

*Supplement to the Seventy-eighth Annual Report of the Registrar-General for Scotland. Part I—Life Tables. (H.M.S.O., 1934).

table—one year only. To some extent, therefore, the figures may be affected by short-term fluctuations from the general secular trend due to the incidence of epidemics or adverse meteorological conditions; at the older ages in particular the death rate from respiratory and cardiac diseases can vary considerably from one year to another according to the nature of the weather in the winter months. Nevertheless, it is not to be supposed that if the comparison has been based on the experience of periods other than those used in the construction of Table B the broad picture of secular trend which the table is intended to provide would have differed in any important respect.

8. The implications of the figures are more easily seen when they are plotted as in the accompanying diagrams. The index numbers for ages 80 and 90 have not been included in the diagrams. The considerations referred to in the previous

RATES OF MORTALITY EXPRESSED AS PERCENTAGES OF 1871 RATES

MALES
FEMALES

paragraph apply with particular force to the mortality rates at these ages; moreover, the figures may also be affected by variations, from one period to another, in the extent and incidence of age mis-statements or even by differences in the methods employed in computing the graduated rates. For these reasons it might be imprudent to infer that during the period of eighty years covered by the table the rates of mortality at these ages have increased; but it is clear that, in contradistinction to the position at all the younger ages, there is no evidence of any reduction. The last column of Table B shows that (except as regards infant mortality) the percentage reduction in the mortality of 1950-52 as compared with that of 1871 is progressively less as the age advances.

9. It will be seen that over the period 1871–1931 the downward trend of mortality followed much the same course for both sexes. In the twenty years following 1931, however, there was a marked divergence at ages 50 and 60. Taking these two ages together it can be said that there was little or no reduction in the mortality of men, although the women's rates fell by one-third at age 50 and nearly one-quarter at age 60. A more detailed indication of the changes in adult mortality over the last twenty years is provided by the following figures:

TABLE C

Adult mortality, 1930–32 and 1950–52

Age	Rates of mortality per thousand				1950–52 as percentage of 1930–32		Women's mortality rates as percentage of men's	
	Men		Women					
	1930–32	1950–52	1930–32	1950–52	Men	Women	1930–32	1950–52
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
22	3·4	1·5	3·1	1·5	44	48	91	100
27	3·6	1·8	3·5	1·8	50	51	97	100
32	4·2	2·1	4·2	2·0	50	48	100	95
37	5·7	2·7	5·0	2·5	47	50	88	93
42	7·5	4·2	6·0	3·4	56	57	80	81
47	10	7·5	7·9	5·0	75	63	79	67
52	13	13	11	7·6	100	69	85	58
57	20	21	16	12	105	75	80	57
62	30	32	24	19	107	79	80	59
67	48	46	36	32	96	89	75	70
72	75	68	60	53	91	88	80	78
77	118	111	96	88	94	92	81	79
82	175	174	149	143	99	96	85	82
87	240	247	221	213	103	96	92	86

Up to age 42, the percentages in column (6) are much the same as those in column (7); during the twenty years the mortality of young adults of both sexes declined by about one half. Over the age-range 47-62 the position is quite different; the women's rates for 1950–52 show an improvement on those for 1930–32 which, although less than at the younger ages, is still substantial, whereas except at age 47 the 1950–52 rates for men are equal to or higher than those of twenty years earlier. At the older ages the two sets of percentages are again broadly similar; neither shows a very marked change in the mortality rates, but the decline is appreciably greater in the case of women than in the case of men.

10. Columns (8) and (9) tell the same story in a different way. In 1930–32 the mortality rates for women over the greater part of the age-range were about

four-fifths of the men's rates; at the youngest and oldest ages the difference was less than this. The series of ratios for 1950–52 dips heavily in the middle as a result of the relative lack of improvement in the men's rates at the ages concerned, the mortality of women at these ages being little more than one-half of the male mortality.

11. If this divergence between male experience and female experience had been confined to ages over 50 it might be held to be attributable, in part at any rate, to the effects of the hardships of active service on the vitality of ex-combatants of the war of 1914-18. It will be seen from Table B, however, that there is no evidence of a similar feature in the figures for the correspondingly younger ages in 1921 and 1931, and it would seem that for an adequate explanation an analysis of the experience according to cause of death would be necessary. That, however, is outside the scope of this report.

12. Table B shows that between 1931 and 1951 mortality in childhood declined rapidly. The chance of death in the first year of life is now less than one-half of what it was twenty years ago, and less than one-third of what it was at the end of last century. Nevertheless, the mortality risk is, even now, as great in the twelve months following birth as that of a man or woman who is "well on in the sixties", so that there may still be scope for a considerable further reduction. At age 10 no such comparison is possible; the death rate has always been at a minimum in the neighbourhood of this age and has now reached a point at which four places of decimals are necessary to express it. The 1950–52 rates for both sexes were at ages 20 and 30 about one-sixth, and at age 40 less than one quarter, of the 1871 figures. As previously remarked, the decline over this age-range between 1931 and 1951 has been of the order of 50 per cent.

13. Impressive as these figures are, it is to be noted that in recent years at any rate the decline in the mortality of England and Wales has (except in early life) been even greater. As no Life Table for England and Wales based on the 1951 Census has yet been published the following comparison is based on group death-rates for the two countries for the periods 1930–32 and 1950–52:

Group death rates for 1950–52 as percentages of those for 1930–32

Age group	Males		Females	
	E. & W.	S.	E. & W.	S.
0– 4	33	33	33	32
5– 9	29	32	23	25
10–14	36	32	26	28
15–19	37	44	28	38
20–24	42	45	32	50
25–34	46	51	40	49
35–44	51	53	50	54
45–54	75	88	64	67
55–64	98	106	73	79
65–74	97	95	81	89
75–84	95	97	90	94

The differences between the percentages for the two countries are not very marked except in the age-ranges 15-34 in the case of females and 45-64 in the case of males. It is noticeable that as in Scotland, there is in England and Wales a considerable disparity between the degree of improvement for males and that for females in some of the later age-groups, although the extent of the difference is rather less, and the ages at which it is most apparent are rather higher, than in Scotland.

14. In concluding this survey of the secular trend of mortality one or two general observations may be offered. It has been pointed out that the decline has been greatest at the young ages and has progressively decreased until, in extreme old age, there is little evidence of any secular change. The significance of this can perhaps be shown most succinctly by a comparison of the expectations of life computed from the earliest and the two latest Scottish Life Tables:

Expectations of Life ($\overset{\circ}{e}_x$)

Age x	Males			Females		
	1871	1931	1951	1871	1931	1951
0	39·8	56·0	64·4	42·0	59·5	68·7
10	45·3	54·9	57·9	47·4	57·2	61·5
20	38·2	46·0	48·3	40·6	48·3	51·9
30	31·6	37·4	39·1	34·1	39·8	42·7
40	25·4	29·1	29·9	27·7	31·4	33·6
50	19·3	21·3	21·4	21·3	23·3	24·8
60	13·3	14·1	14·3	14·8	15·9	16·8
70	8·4	8·4	8·8	9·4	9·6	10·1

During the eighty years covered by the table the expectation of life at birth has—as the result of the persistent decline in mortality—been increased by a quarter of a century; but the extent of the decline at ages over 70 has been of such comparatively meagre proportions as to add a mere fraction of a year to the expectation at that age. The growth in numbers of the aged population has been due not so much to any substantial lengthening of the period of old age as to the great increase in the numbers who survive to enter that period. The absence of any material increase between 1931 and 1951 in the expectations of life for men at the older ages is the natural corollary of the circumstances described in paragraphs 9-11 above.

15. It has also to be remembered that expectations of life computed from a table of contemporary mortality can only be regarded as a measure of the probable longevity of the existing population if it is assumed that mortality rates will undergo no further secular change. This is clearly an unreal assumption to make, and it has to be admitted that the expectation of life—indeed, the whole concept of the life table as normally computed—is artificial on that account. To approach the construction of the table in a spirit of realism it would be necessary to attempt an estimate of the mortality experience of the existing population during their future life-time; this would, of course, involve forecasting the mortality of the newly-born for at least a century ahead. In justification of the traditional practice it must be recalled that the idea of the life table was conceived in a distant past when, although it was self-evident that the risk of death increased with advancing age, there was no sign of any persistent secular change. Thus while a life table based on current mortality may provide a convenient epitome for comparative purposes it can no longer be regarded as a suitable instrument for predicting the size and age-constitution of the future population.

Mortality rates according to marital condition

16. The classification of the Census population, and the deaths recorded in 1950–52, according to marital condition enabled death-rates at quinary age-points to be calculated, by the same method as that employed in the construction of the Life Table, for single, married and widowed (including divorced) persons of each sex. These are given in Table D below. At the younger ages the numbers

10

in the widowed population, and of the deaths occurring in it, are quite small, and the rates in this section of the table should be regarded with some reserve on this account.

TABLE D

Rates of mortality (q_x) per thousand according to marital condition

Age x	Males			Females		
	Single	Married	Widowed	Single	Married	Widowed
22	1·7	1·0		1·8	1·1	
27	2·6	1·2		2·4	1·6	
32	3·3	1·7	2·9	3·1	1·7	2·6
37	4·6	2·3	5·8	3·5	2·2	3·4
42	6·4	3·8	7·7	4·8	3·0	4·4
47	11	6·9	10	5·5	4·8	5·7
52	16	12	17	8·1	7·2	8·5
57	24	19	28	12	12	14
62	39	30	37	18	19	20
67	52	43	51	29	32	33
72	75	65	73	48	53	55
77	127	101	117	86	87	89
82	188	160	181	137	127	147
87	255	246	247	218	202	213

17. The immediately obvious feature of the table is that the mortality of married persons is lighter than that of the single and the widowed at all ages in the case of men, and at the younger ages in the case of women; the mortality of older women is much the same in all three classes. The extent of the differences, and the manner in which they vary with age, can be better seen if the rates pertaining to the single and the widowed are expressed as percentages of the rates experienced by the married. These percentages are shown in the following table. with the corresponding figures derived from the 1931 Census and the deaths of 1930–32.

TABLE E

Mortality rates of single and of widowed persons expressed as percentages of those of married persons

Age	Males				Females			
	1950–52		1930–32		1950–52		1930–32	
	Single	Widowed	Single	Widowed	Single	Widowed	Single	Widowed
22	170		160		164		68	
27	217		164		150		81	
32	194	171	151	195	182	153	87	129
37	200	252	160	186	159	155	94	105
42	168	203	158	190	160	147	98	111
47	159	145	154	169	115	119	103	116
52	133	142	147	146	112	118	99	117
57	126	147	146	132	100	117	98	109
62	130	123	136	128	95	105	99	108
67	121	119	126	124	91	103	100	117
72	115	112	133	121	91	104	101	113
77	126	116	114	120	99	102	102	105
82	118	113	112	112	108	116	108	114

Looking first at the 1950–52 sections of the table, it will be seen that in the case of men the percentages decrease as the age advances and that, on a broad view, there is no very great difference between the single and the widowed. In a general way, these features appear also in the figures for women, but over a considerable span of ages in the lower part of the table the mortality rates of single women are slightly less than those of married women, while those of widows are slightly greater. Another noticeable feature of the figures for both single and widowed women is the abrupt drop in the percentages between ages 42 and 47.

18. When the 1930–32 percentages are brought into the picture it becomes apparent that during the twenty years between the two periods there was a marked change in the relationship, at the younger ages, between the mortality of single women and that of married women. In 1930–32, the single women's mortality rates up to age 42 were less than those of married women; in 1950–52 they were, on average, some 60 per cent. greater. It is evident that this change could not have occurred if, during the period between the two censuses, the mortality rates of the two classes had been declining at much the same rates. Actually, while the rates of single women in youth and early middle age fell by something like 25 per cent., those of married women in the same age-range fell by about 60 per cent. Part of this sensational decline is no doubt attributable to the enormous progress which has been made towards the elimination of the risks of child-bearing; but this cannot account for the fact that the mortality of married women in youth and early middle age is now substantially *less* than that of the unmarried. Moreover, the table shows that over the same age-range there has also been some deterioration, relative to the mortality of the married, in the position of both single and widowed men and of widowed women.

19. There can be little doubt that these features are associated with the fact that at the ages in question there has been an increase (in the case of women, a very substantial increase) in the proportion of married persons in the population. The proportions for 1931 and 1951, as revealed by the respective censuses, are as follows:

Proportions married

Age Group	Men		Women	
	1951	1931	1951	1931
	per cent		per cent	
20–24	20	12	40	23
25–29	58	43	70	50
30–34	75	68	78	66
35–39	81	78	79	70
40–44	83	80	77	70
45–49	84	79	72	68

This rise in the proportions married is the result of the high marriage rates which, beginning in 1939, have been maintained in the post-war period. As persons who select themselves, or are selected, for marriage are likely, on average, to possess some superiority in health and vitality over the general body of the unmarried,

12

it is to be expected that as this body is reduced in numbers the calibre of the individuals remaining in it will also be progressively reduced in these respects, and the comparative mortality rates which have been discussed in these paragraphs would appear to provide striking evidence of this.

Mortality in different geographical areas

20. In Appendix III mortality rates for each sex are given at ages 0, 2, 7 and at quinary intervals thereafter for the following geographical regions:

					Population as a percentage of the whole of Scotland	
					Males	Females
(1) Edinburgh	..	..	..	..	9	10
(2) Glasgow	..	..	..	..	21	21
(3) Other large burghs			..	..	23	24
(4) Northern counties:						
Crofting ..		(excluding			5	5
Other ..		(1), (2) and			9	9
		(3))				
(5) Central counties			..	..	28	27
(6) Southern counties			..	..	5	4
					100	100

"Other large burghs" include Aberdeen and Dundee and the burghs mentioned in Part III of the First Schedule to the Local Government (Scotland) Act, 1947. The Central counties consist of Fife, Clackmannan, Stirling, West Lothian, Midlothian, East Lothian, Lanark, Dunbarton, Renfrew and Ayr. The Southern counties are to the south and east of these and the Northern counties to the north and west. Of the Northern counties the "crofting" section comprises the counties of Zetland, Orkney, Caithness, Sutherland, Ross and Cromarty, Inverness and Argyll. Before the regional mortality rates were computed adjustments were made between the populations enumerated, and the births and deaths recorded, in each region to bring them to a "resident population" basis.

21. The table in Appendix III is somewhat too diffuse to provide a ready means of comparing the mortality experienced in the different regions. Moreover, in some sections of the table the numbers of deaths on which the rates are based are quite small, so that the disparities between one figure and another may reflect random fluctuations rather than genuine differences in experience. For comparative purposes, therefore, an alternative basis was adopted. Death rates for quinary age-groups 0-4, 5-9, ... were computed for the whole of Scotland and these were multiplied by the regional populations in the corresponding age-groups to obtain the number of deaths which would have occurred if the experience of each region had been identical with the national average. These "expected" deaths were then combined in broader age-groupings and the percentage ratio of actual to expected deaths was computed for each such group. These percentages are given in the following table:

13

Actual deaths (1950–52) in certain regions as percentages of those expected on the basis of the national experience

Age Group		Edinburgh	Glasgow	Other large burghs	Northern Counties		Central Counties	Southern Counties
					Crofting	Other		
0–14	M	78	119	101	98	84	99	90
	F	71	125	100	82	84	100	87
15–24	M	92	114	93	138	91	95	90
	F	78	142	100	104	60	89	60
25–34	M	87	114	102	110	98	90	107
	F	84	130	99	82	78	93	89
35–44	M	90	121	103	104	73	93	94
	F	85	120	101	89	88	99	72
45–54	M	105	124	105	72	76	91	79
	F	93	115	98	96	87	98	93
55–64	M	107	123	106	70	74	92	83
	F	90	119	100	85	82	101	88
65–74	M	104	117	105	80	84	95	88
	F	94	113	100	87	87	102	94
75–84	M	100	113	103	86	88	100	100
	F	94	109	103	93	91	101	100
85 & over	M	104	107	101	96	95	99	103
	F	98	103	102	97	96	103	93
Total, all ages	M	101	118	104	84	84	96	91
	F	92	114	101	91	89	101	93

22. The most prominent feature of the table is the relatively high mortality of Glasgow; at ages under 65 the actual deaths among both men and women exceed the expectation on the "whole country" basis by something like 20 per cent. As the population of Glasgow at these ages is about one-fifth of that of the whole of Scotland, its mortality must exceed that of the rest of the country by about 25 per cent. For the older age-groups the percentages are rather lower; the highest percentages are those for females in the age-range 15-34. In Edinburgh, on the other hand, the percentages in this age-range are low; indeed, the mortality of Edinburgh women at all ages is below the national average, although the mortality of Edinburgh men over age 45 slightly exceeds the expectation on this basis. A noteworthy feature of the Edinburgh experience is the very light mortality of children.

23. The lightest mortality is that of the Northern counties (both "crofting" and other); the total deaths at all ages were in the case of men about 15 per cent, and in the case of women about 10 per cent, below the expectation on the basis of the general average. The percentages for different age-groups, however, vary considerably; of particular note are the high percentage for males aged 15-24 in

the crofting counties, the low percentage for females in the same age-group in the other Northern counties, and the low percentages for the middle-aged males in both areas. The mortality in large burghs other than Edinburgh and Glasgow, and in the central counties, does not differ markedly from the national average; in the Southern counties it is, in most of the age-groups, appreciably lighter.

I am, Sir,

Your obedient Servant,

G. H. MADDEX.

GOVERNMENT ACTUARY'S DEPARTMENT,
LONDON, S.W.1
28*th September*, 1954.

Appendix I

Notes on the methods employed in preparing the tables

(a) Grouping of ages for the main body of the life table.

The calculation of pivotal values of the death-rate at quinary age-points involves the grouping, in blocks of five, of the population and deaths recorded at individual ages, the object being to eliminate as far as possible irregularities, due to age mis-statements, in the progression of the numbers from age to age. In the construction of the life tables based on the 1931 Census the system of grouping employed was 5-9, 10-14, . . . 95-99. On the present occasion an examination of the data at individual ages revealed no reason for departing from this system, which yields pivotal values at ages 12, 17, 22 . . . 92 and (by osculatory interpolation) values at every individual age from 17 to 87, leaving the values for younger and older ages to be determined by other methods.

(b) Ages 0 to 5

It has become customary to discard the Census enumerations of the population at these ages on the ground of unreliability and to derive the death-rates by means of a population constructed from the records of births and deaths by the process described in Appendix I to the report on the 1931 Life Tables. This method is based on the assumptions (i) that birth registrations provide a more complete and accurate source of information than the numbers enumerated at a Census taken after an interval of up to six years from the date of birth and (ii) that within this interval the effect of migration can be ignored.

The customary method has again been adopted on this occasion. The opportunity was, however, taken to compare the values of q_x thus derived with those obtained on the same principle as the pivotal values in the main body of the table, viz., by the use of a denominator consisting of the population enumerated at the Census increased by half the average annual number of deaths in the three years 1950-52. The results by the two methods (designated (a) and (b) respectively) are as follows:

| Age x | Rates of mortality (q_x) derived from | | | |
	(a) (Births)	(b) (Census)	(a) (Births)	(b) (Census)
	Males		Females	
0	·04136	·04236	·03226	·03305
1	·00296	·00302	·00271	·00276
2	·00173	·00176	·00146	·00150
3	·00136	·00138	·00112	·00113
4	·00114	·00109	·00085	·00082
5	·00098	·00115	·00067	·00079

At each of the ages 0 to 3, the rates obtained by using the Census populations are about 2 per cent. greater than those based on birth registrations. The difference is not large—in some cases, indeed, it would not have been apparent if the rates had been shown to four places of decimals instead of five—and it arises primarily from the fact that (taking the four ages together) the numbers enumerated at the Census date fall short of those calculated from the 395,000 births in the four years preceding that date by about 4,000 for each sex. If the view be taken that a discrepancy of this order could conceivably be accounted for by an outward migration balance the superiority of method (a) over method (b) cannot on this occasion be regarded as established for these four ages.

At ages 4 and 5 the shortfall in the Census enumerations, as compared with the estimated population at the Census date derived from the registrations of births and deaths, is rather greater; the differences are about 3 per cent. and 5 per cent. respectively. It might be expected, therefore, that at these ages also the death-rates obtained by method (b) would be correspondingly greater than those obtained by method (a); actually, however, at age 4 they are about 4 per cent. *less*, while at age 5 they are

16

greater by as much as 17 per cent. The reason is that whereas at ages 0 to 3 the estimated population (as computed from births and deaths) at the Census date differs very little from the estimated mean population of the three-year period, there is no such similarity at ages 4 and 5 because of the rapid fluctuations in the birth-rate in the years 1946 and 1947. At these ages, therefore, the death-rates obtained by method (a) are unquestionably preferable to those obtained by method (b).

(c) *Ages 6 to 16*

The characteristic feature of the curve of the mortality rates for this range of ages is a decline to a minimum at about the middle of the range. This is followed by a rise which, although fairly rapid at first, becomes less pronounced as the relatively flat rates of the third decade of life are approached.

The ungraduated rates obtained from the deaths and census populations at each individual age displayed a general conformity with this picture. It was found that (subject to minor adjustments of the rates for females at ages 13 and 14) an adequate graduation could be obtained by summing in groups of three, i.e., by replacing each ungraduated q_x by $\frac{1}{3}(q_{x-1} + q_x + q_{x+1})$. The calculation of q_6 and q_{16} by this process involved the use of the values already established for q_5 and q_{17} and so secured a smooth junction at each end of the range.

(d) *The advanced ages*

At these ages the data are necessarily scanty and the progression of the ungraduated mortality rates is highly susceptible to the distorting effects of mis-statements of age. Complicated methods of graduation would be out of place and the Scottish Life Tables for 1930-32, like some of the other tables which have been constructed by King's method, were extended to the end of life by the use of a single constant, a fixed value (determined experimentally) being assigned to the function colog p_{x+5}/colog p_x for values of x from 87 onwards.

On the present occasion the reliability of the data for aged men was particularly suspect in that the group death rate for the ages 95-99 was appreciably less than that for the ages 90-94. No method of graduation compatible with the axiom that the chance of death increases with age could therefore achieve a close agreement between the actual and expected deaths from age 90 onwards; but it was thought worth while to consider whether a departure from the process employed on the 1930-32 data would, on this occasion, give a rather better fit. Experiment showed that this could be secured by assuming a constant value for $\frac{p_{x+5}}{p_x}$ instead of for the quotient of the cologs. As the following table shows, some justification for the change is provided by the behaviour of the two functions at earlier ages:

Age x	Men		Women	
	$\dfrac{\text{colog } p_{x+5}}{\text{colog } p_x}$	$\dfrac{p_{x+5}}{p_x}$	$\dfrac{\text{colog } p_{x+5}}{\text{colog } p_x}$	$\dfrac{p_{x+5}}{p_x}$
72	1·65	·955	1·69	·963
77	1·63	·929	1·67	·940
82	1·49	·911	1·56	·918

In theory, the correct method of dealing with either function would be to fit curves of different types to these figures, choosing whichever type gave the best results when applied to the data at higher ages. The circumstances hardly warrant such refined treatment, but the figures are useful as an indication that for high values of x colog p_{x+5}/colog p_x changes more quickly than p_{x+5}/p_x. If, therefore, the simple device of completing the mortality table by the use of a single constant is retained, it would seem more appropriate to identify the constant with the latter function than with the former.

The condition $\dfrac{p_{x+5}}{p_x} = K$ is satisfied if the series p_x is a geometrical progression,

17

i.e., if $\dfrac{p_{x+1}}{p_x} = r$, where $r^5 = K$. The values of r derived from the data from age 87 onwards were ·974 (men) and ·979 (women). In completing the mortality table by means of these ratios a smooth junction at age 87 was secured by using the new value of q_{92} to obtain revised values of q at ages 83 to 86 by the osculatory interpolation formula.

In the case of women, the expected and actual deaths are in very close agreement. The figures for men are as follows:

Age	Census population	Expected deaths	Actual deaths	Actual *less* Expected	
				+	−
90	341	122	133	11	
91	245	94	94	—	
92	151	62	68	6	
93	115	50	54	4	
94	70	32	31		1
	(922)	(360)	(380)		
95	50	24	18		6
96	27	14	12		2
97	24	13	7		6
98	14	8	5		3
99	7	4	3		1
100 and over	6	4	2		2
	(128)	(67)	(47)		
Total	1,050	427	427	21	21

In the age-group 90–94 the actual deaths exceed the expected by 5 per cent., while those in the group 95 and over are only 70 per cent. of the expectation; and the crude death-rates obtained by dividing the group populations into the group deaths are ·41 and ·37 respectively. It is, of course, not altogether outside the bounds of possibility that these curious results are due to purely random fluctuations in the mortality of the three years to which the data relate; but—assuming that there were no major errors in the census enumerations and death registrations so far as total numbers are concerned—it seems far more likely that the distortion arises primarily from mis-statements of age.

(e) Mortality rates according to geographical area

These rates were calculated by the same methods as were employed for the main tables, viz., at the infantile ages by reference to birth registrations and by the extraction of pivotal values at ages 12, 17, . . . 87. At age 7 the group death-rate for ages 5 to 9 was adopted.

In the construction of the abridged life tables for Edinburgh and Glasgow, l_5 was obtained by means of the death-rates at individual ages 0 to 4. The values of l_{10}, l_{15}, . . . were then obtained from the formula

$$\text{colog } {}_5p_x = 5(1 + \delta) \text{ colog } p_{x+2}$$

the small fraction δ being introduced (in the age-range 40–85 only) to give effect to the fact that in this range colog p_x increases geometrically rather than arithmetically. The value adopted for δ in all four tables was ·008.

The column of $\overset{\circ}{e}_x$ was obtained by means of the formula

$$T_x - T_{x+10} = \tfrac{5}{3} \, (l_x + 4l_{x+5} + l_{x+10})$$

In order to obtain death-rates at the very high ages for this purpose the rates derived for the main life-table by the process described in (d) above were multiplied by the ratios of actual to expected deaths in the age-group 85 and over shown in Table F of the report, viz., for Edinburgh 1·04 (men) and ·98 (women) and for Glasgow 1·07 (men) and 1·03 (women). The rates so obtained were found to give a very close correspondence between actual and expected deaths in all four cases.

18

Appendix II.   Table 1

Scottish Life Table, 1950-52—Males

Age x	l_x	d_x	p_x	q_x	$\overset{\circ}{e}_x$	Age x
0	100,000	4,136	·95864	·04136	64·4	0
1	95,864	284	·99704	·00296	66·2	1
2	95,580	165	·99827	·00173	65·4	2
3	95,415	130	·99864	·00136	64·5	3
4	95,285	109	·99886	·00114	63·6	4
5	95,176	93	·99902	·00098	62·7	5
6	95,083	85	·99911	·00089	61·7	6
7	94,998	77	·99919	·00081	60·8	7
8	94,921	72	·99924	·00076	59·8	8
9	94,849	64	·99932	·00068	58·9	9
10	94,785	56	·99941	·00059	57·9	10
11	94,729	48	·99949	·00051	56·9	11
12	94,681	48	·99949	·00051	56·0	12
13	94,633	53	·99944	·00056	55·0	13
14	94,580	64	·99932	·00068	54·0	14
15	94,516	79	·99916	·00084	53·1	15
16	94,437	96	·99898	·00102	52·1	16
17	94,341	109	·99884	·00116	51·2	17
18	94,232	119	·99874	·00126	50·2	18
19	94,113	126	·99866	·00134	49·3	19
20	93,987	133	·99859	·00141	48·3	20
21	93,854	139	·99852	·00148	47·4	21
22	93,715	144	·99846	·00154	46·5	22
23	93,571	150	·99840	·00160	45·6	23
24	93,421	154	·99835	·00165	44·6	24
25	93,267	159	·99830	·00170	43·7	25
26	93,108	163	·99825	·00175	42·8	26
27	92,945	167	·99820	·00180	41·8	27
28	92,778	173	·99814	·00186	40·9	28
29	92,605	177	·99809	·00191	40·0	29
30	92,428	182	·99803	·00197	39·1	30
31	92,246	188	·99796	·00204	38·2	31
32	92,058	195	·99788	·00212	37·2	32
33	91,863	203	·99779	·00221	36·3	33
34	91,660	211	·99770	·00230	35·4	34
35	91,449	219	·99760	·00240	34·5	35
36	91,230	232	·99746	·00254	33·5	36
37	90,998	248	·99728	·00272	32·6	37
38	90,750	267	·99706	·00294	31·7	38
39	90,483	287	·99683	·00317	30·8	39
40	90,196	311	·99655	·00345	29·9	40
41	89,885	342	·99620	·00380	29·0	41
42	89,543	379	·99577	·00423	28·1	42
43	89,164	423	·99526	·00474	27·2	43
44	88,741	471	·99469	·00531	26·4	44
45	88,270	526	·99404	·00596	25·5	45
46	87,744	587	·99331	·00669	24·7	46
47	87,157	656	·99247	·00753	23·8	47
48	86,501	734	·99152	·00848	23·0	48
49	85,767	817	·99048	·00952	22·2	49
50	84,950	906	·98934	·01066	21·4	50
51	84,044	998	·98813	·01187	20·6	51
52	83,046	1,092	·98685	·01315	19·9	52
53	81,954	1,185	·98554	·01446	19·1	53
54	80,769	1,276	·98420	·01580	18·4	54

Scottish Life Table, 1950-52—Males

Age x	l_x	d_x	p_x	q_x	$\overset{\circ}{e}_x$	Age x
55	79,493	1,370	·98276	·01724	17·7	55
56	78,123	1,469	·98119	·01881	17·0	56
57	76,654	1,577	·97943	·02057	16·3	57
58	75,077	1,692	·97746	·02254	15·6	58
59	73,385	1,812	·97531	·02469	15·0	59
60	71,573	1,931	·97302	·02698	14·3	60
61	69,642	2,046	·97062	·02938	13·7	61
62	67,596	2,153	·96815	·03185	13·1	62
63	65,443	2,244	·96571	·03429	12·5	63
64	63,199	2,320	·96329	·03671	12·0	64
65	60,879	2,392	·96071	·03929	11·4	65
66	58,487	2,467	·95782	·04218	10·8	66
67	56,020	2,552	·95445	·04555	10·3	67
68	53,468	2,633	·95076	·04924	9·8	68
69	50,835	2,702	·94685	·05315	9·3	69
70	48,133	2,768	·94250	·05750	8·8	70
71	45,365	2,837	·93746	·06254	8·3	71
72	42,528	2,913	·93150	·06850	7·8	72
73	39,615	2,985	·92465	·07535	7·3	73
74	36,630	3,037	·91708	·08292	6·9	74
75	33,593	3,066	·90872	·09128	6·4	75
76	30,527	3,067	·89953	·10047	6·0	76
77	27,460	3,036	·88945	·11055	5·6	77
78	24,424	2,973	·87829	·12171	5·3	78
79	21,451	2,872	·86610	·13390	4·9	79
80	18,579	2,728	·85315	·14685	4·6	80
81	15,851	2,541	·83971	·16029	4·3	81
82	13,310	2,315	·82606	·17394	4·1	82
83	10,995	2,063	·81236	·18764	3·8	83
84	8,932	1,800	·79843	·20157	3·6	84
85	7,132	1,540	·78402	·21598	3·4	85
86	5,592	1,292	·76891	·23109	3·2	86
87	4,300	1,063	·75285	·24715	3·0	87
88	3,237	863	·73328	·26672	2·8	88
89	2,374	678	·71421	·28579	2·6	89
90	1,696	516	·69564	·30436	2·4	90
91	1,180	380·5	·67755	·32245	2·3	91
92	799·5	271·9	·65993	·34007	2·2	92
93	527·6	188·5	·64277	·35723	2·1	93
94	339·1	126·8	·62606	·37394	2·0	94
95	212·3	82·8	·60978	·39022	1·9	95
96	129·5	52·6	·59393	·40607	1·8	96
97	76·9	32·4	·57849	·42151	1·7	97
98	44·5	19·4	·56345	·43655	1·7	98
99	25·1	11·3	·54880	·45120	1·6	99
100	13·8	6·4	·53453	·46547	1·6	100
101	7·4	3·5	·52063	·47937	1·5	101
102	3·9	1·9	·50709	·49291	1·4	102
103	2·0	1·0	·49391	·50609	1·3	103
104	1·0	·5	·48107	·51893	1·2	104

Age x	l_x	d_x	p_x	q_x	$\overset{\circ}{e}_x$	Age x
0	100,000	3,226	·96774	·03226	68·7	0
1	96,774	262	·99729	·00271	69·9	1
2	96,512	141	·99854	·00146	69·1	2
3	96,371	108	·99888	·00112	68·2	3
4	96,263	82	·99915	·00085	67·3	4
5	96,181	64	·99933	·00067	66·4	5
6	96,117	59	·99939	·00061	65·4	6
7	96,058	53	·99945	·00055	64·4	7
8	96,005	48	·99950	·00050	63·5	8
9	95,957	43	·99955	·00045	62·5	9
10	95,914	39	·99959	·00041	61·5	10
11	95,875	36	·99962	·00038	60·6	11
12	95,839	42	·99956	·00044	59·6	12
13	95,797	50	·99948	·00052	58·6	13
14	95,747	58	·99939	·00061	57·6	14
15	95,689	70	·99927	·00073	56·7	15
16	95,619	84	·99912	·00088	55·7	16
17	95,535	94	·99902	·00098	54·8	17
18	95,441	105	·99890	·00110	53·8	18
19	95,336	116	·99878	·00122	52·9	19
20	95,220	128	·99866	·00134	51·9	20
21	95,092	138	·99855	·00145	51·0	21
22	94,954	146	·99846	·00154	50·1	22
23	94,808	154	·99838	·00162	49·2	23
24	94,654	159	·99832	·00168	48·2	24
25	94,495	163	·99827	·00173	47·3	25
26	94,332	168	·99822	·00178	46·4	26
27	94,164	171	·99818	·00182	45·5	27
28	93,993	175	·99814	·00186	44·6	28
29	93,818	176	·99812	·00188	43·6	29
30	93,642	178	·99810	·00190	42·7	30
31	93,464	181	·99806	·00194	41·8	31
32	93,283	186	·99801	·00199	40·9	32
33	93,097	192	·99794	·00206	40·0	33
34	92,905	199	·99786	·00214	39·1	34
35	92,706	208	·99776	·00224	38·1	35
36	92,498	217	·99765	·00235	37·2	36
37	92,281	229	·99752	·00248	36·3	37
38	92,052	242	·99737	·00263	35·4	38
39	91,810	256	·99721	·00279	34·5	39
40	91,554	272	·99703	·00297	33·6	40
41	91,282	289	·99683	·00317	32·7	41
42	90,993	310	·99659	·00341	31·8	42
43	90,683	333	·99633	·00367	30·9	43
44	90,350	358	·99604	·00396	30·0	44
45	89,992	384	·99573	·00427	29·1	45
46	89,608	414	·99538	·00462	28·2	46
47	89,194	447	·99499	·00501	27·4	47
48	88,747	482	·99457	·00543	26·5	48
49	88,265	517	·99414	·00586	25·6	49
50	87,748	557	·99365	·00635	24·8	50
51	87,191	602	·99310	·00690	24·0	51
52	86,589	654	·99245	·00755	23·1	52
53	85,935	712	·99171	·00829	22·3	53
54	85,223	776	·99089	·00911	21·5	54

Scottish Life Table, 1950-52—Females

Age x	l_x	d_x	p_x	q_x	$\overset{\mathrm{o}}{e}_x$	Age x
55	84,447	845	·98999	·01001	20·7	55
56	83,602	920	·98900	·01100	19·9	56
57	82,682	999	·98792	·01208	19·1	57
58	81,683	1,078	·98680	·01320	18·3	58
59	80,605	1,157	·98564	·01436	17·5	59
60	79,448	1,243	·98436	·01564	16·8	60
61	78,205	1,339	·98288	·01712	16·1	61
62	76,866	1,453	·98110	·01890	15·3	62
63	75,413	1,578	·97907	·02093	14·6	63
64	73,835	1,710	·97684	·02316	13·9	64
65	72,125	1,849	·97436	·02564	13·2	65
66	70,276	1,999	·97155	·02845	12·6	66
67	68,277	2,160	·96836	·03164	11·9	67
68	66,117	2,323	·96487	·03513	11·3	68
69	63,794	2,481	·96111	·03889	10·7	69
70	61,313	2,638	·95697	·04303	10·1	70
71	58,675	2,797	·95233	·04767	9·5	71
72	55,878	2,958	·94706	·05294	9·0	72
73	52,920	3,108	·94127	·05873	8·5	73
74	49,812	3,236	·93504	·06496	8·0	74
75	46,576	3,343	·92822	·07178	7·5	75
76	43,233	3,431	·92065	·07935	7·0	76
77	39,802	3,495	·91218	·08782	6·6	77
78	36,307	3,531	·90275	·09725	6·1	78
79	32,776	3,525	·89245	·10755	5·7	79
80	29,251	3,469	·88139	·11861	5·4	80
81	25,782	3,360	·86966	·13034	5·0	81
82	22,422	3,198	·85736	·14264	4·7	82
83	19,224	2,992	·84437	·15563	4·4	83
84	16,232	2,749	·83063	·16937	4·1	84
85	13,483	2,477	·81631	·18369	3·9	85
86	11,006	2,184	·80159	·19841	3·6	86
87	8,822	1,882	·78665	·21335	3·4	87
88	6,940	1,595	·77013	·22987	3·2	88
89	5,345	1,315	·75396	·24604	3·0	89
90	4,030	1,055	·73813	·26187	2·9	90
91	2,975	825	·72263	·27737	2·7	91
92	2,150	629	·70745	·29255	2·6	92
93	1,521	468	·69259	·30741	2·5	93
94	1,053	339	·67805	·32195	2·4	94
95	714·0	240·0	·66381	·33619	2·3	95
96	474·0	166·0	·64987	·35013	2·2	96
97	308·0	112·0	·63622	·36378	2·1	97
98	196·0	73·9	·62286	·37714	2·0	98
99	122·1	47·6	·60978	·39022	1·9	99
100	74·5	30·0	·59697	·40303	1·8	100
101	44·5	18·5	·58443	·41557	1·8	101
102	26·0	11·1	·57216	·42784	1·7	102
103	14·9	6·6	·56014	·43986	1·7	103
104	8·3	3·7	·54838	·45162	1·6	104
105	4·6	2·1	·53686	·46314	1·6	105
106	2·5	1·2	·52559	·47441	1·5	106
107	1·3	·6	·51455	·48545	1·5	107

Appendix II. Table 2

Edinburgh Life Table, 1950-52

Age x	MALES l_x	$\overset{\circ}{e}_x$	FEMALES l_x	$\overset{\circ}{e}_x$	Age x
0	10,000	65·1	10,000	70·5	0
5	9,631	62·5	9,732	67·5	5
10	9,597	57·7	9,713	62·6	10
15	9,568	52·9	9,689	57·7	15
20	9,515	48·2	9,645	53·0	20
25	9,453	43·5	9,597	48·3	25
30	9,377	38·8	9,520	43·6	30
35	9,288	34·2	9,444	39·0	35
40	9,173	29·5	9,350	34·3	40
45	9,003	25·1	9,214	29·8	45
50	8,664	20·9	8,984	25·5	50
55	8,065	17·3	8,685	21·3	55
60	7,188	14·1	8,210	17·3	60
65	6,047	11·2	7,543	13·6	65
70	4,742	8·6	6,460	10·5	70
75	3,257	6·4	5,001	7·8	75
80	1,805	4·5	3,301	5·4	80
85	681	3·2	1,534	3·9	85

Appendix II. Table 3

Glasgow Life Tables, 1950-52

Age x	MALES l_x	$\overset{\circ}{e}_x$	FEMALES l_x	$\overset{\circ}{e}_x$	Age x
0	10,000	62·0	10,000	66·3	0
5	9,451	60·6	9,532	64·6	5
10	9,399	55·9	9,503	59·7	10
15	9,376	51·0	9,479	54·9	15
20	9,320	46·3	9,413	50·2	20
25	9,231	41·8	9,309	45·8	25
30	9,139	37·2	9,198	41·3	30
35	9,025	32·6	9,079	36·8	35
40	8,882	28·1	8,944	32·3	40
45	8,648	23·8	8,765	27·9	45
50	8,262	19·7	8,520	23·7	50
55	7,590	16·2	8,145	19·6	55
60	6,670	13·1	7,582	15·9	60
65	5,458	10·5	6,749	12·5	65
70	4,104	8·1	5,596	9·6	70
75	2,729	5·9	4.119	7·1	75
80	1,378	4·3	2,482	5·0	80
85	483	3·2	1,055	3·8	85

Appendix III

Mortality Experience of Scotland and of Sections of the Country Based on 1951 Census and on Deaths in 1950, 1951 and 1952

(For definitions of table headings see paragraph 20 of the Report)

Rates of Mortality (q_x) at selected ages

Age x	Scotland	Edinburgh	Glasgow	Other Large Burghs	Northern Crofting Counties	Other Northern Counties	Central Counties	Southern Counties
				MALES				
0	·04136	·03131	·04686	·04221	·03972	·03476	·04082	·04038
2	·00173	·00144	·00164	·00168	·00236	·00166	·00190	·00113
7	·00081	·00074	·00108	·00068	·00106	·00087	·00088	·00068
12	·00051	·00061	·00047	·00058	·00069	·00045	·00046	·00040
17	·00116	·00110	·00118	·00114	·00162	·00112	·00112	·00093
22	·00154	·00134	·00187	·00138	·00212	·00132	·00144	·00161
27	·00180	·00159	·00202	·00186	·00176	·00204	·00161	·00179
32	·00212	·00187	·00245	·00214	·00245	·00177	·00189	·00232
37	·00272	·00251	·00319	·00257	·00325	·00196	·00276	·00252
42	·00423	·00369	·00529	·00459	·00412	·00312	·00372	·00407
47	·00753	·00761	·00902	·00815	·00632	·00573	·00695	·00541
52	·01315	·01414	·01666	·01357	·00850	·01007	·01195	·01099
57	·02057	·02257	·02534	·02220	·01423	·01503	·01862	·01614
62	·03185	·03374	·03898	·03330	·02273	·02384	·02995	·02724
67	·04555	·04705	·05499	·04876	·03571	·03687	·04192	·04084
72	·06850	·07184	·07781	·07076	·05625	·05933	·06744	·05917
77	·11055	·11045	·12679	·11269	·09598	·09425	·10804	·11479
82	·17394	·17586	·18771	·17967	·14880	·16026	·17841	·16667
87	·24715	·24333	·26339	·25392	·23131	·23695	·24825	·25789
				FEMALES				
0	·03226	·02379	·03956	·03162	·02655	·02622	·03206	·03036
2	·00146	·00083	·00148	·00153	·00169	·00102	·00169	·00138
7	·00055	·00044	·00055	·00061	·00035	·00067	·00066	·00052
12	·00044	·00052	·00047	·00041	·00018	·00048	·00038	·00043
17	·00098	·00088	·00141	·00095	·00107	·00061	·00085	·00046
22	·00154	·00100	·00221	·00157	·00160	·00092	·00141	·00089
27	·00182	·00158	·00243	·00173	·00167	·00123	·00178	·00167
32	·00199	·00165	·00255	·00208	·00152	·00170	·00179	·00182
37	·00248	·00204	·00301	·00259	·00215	·00222	·00235	·00185
42	·00341	·00291	·00404	·00336	·00323	·00286	·00346	·00240
47	·00501	·00500	·00560	·00505	·00461	·00438	·00487	·00472
52	·00755	·00667	·00888	·00730	·00747	·00657	·00747	·00727
57	·01208	·01108	·01407	·01229	·00996	·01018	·01207	·01008
62	·01890	·01669	·02285	·01873	·01604	·01527	·01918	·01699
67	·03164	·03026	·03652	·03099	·02705	·02846	·03212	·02825
72	·05294	·04947	·05898	·05399	·04666	·04539	·05451	·05141
77	·08782	·07906	·09560	·08899	·07932	·08020	·09075	·09283
82	·14264	·14106	·15619	·14852	·13564	·12984	·14116	·13333
87	·21335	·20426	·22555	·21888	·20198	·19804	·22303	·20361